Attach Address Label

U.S. ENVIRONMENTAL PROTECTION AGENCY

DRAFT DRINKING WATER TREATMENT DETAILED SURVEY QUESTIONNAIRE

Form Approved
OMB Control No. XXX
Approval Expires XXX

The public reporting and recordkeeping burden for this collection of information is estimated to average XXX hours per response. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This estimate includes the time needed to review instructions, develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this ICR under Docket ID No.OW-2004-0035, which is available for public viewing at the Water Docket in the EPA Docket Center (EPA/DC), EPA West, Room B102, 1301 Constitution Ave., NW, Washington, DC 20004. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566-1744, and the telephone number for the Water Docket is (202) 566-2426. An electronic version of the public docket is available through EPA Dockets (EDOCKET) at http://www.epa.gov/edocket. Use EDOCKET to submit or view public comments, access the index listing of the contents of the public docket, and access those documents in the public docket that are available electronically. Once in the system, select "search", then key in the docket ID number identified above. Also, you can send comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, DC 20503, Attention: Desk Office for EPA. Please include the EPA Docket ID No. (XXX) and OMB control number (XXXX-XXXX) in any correspondence.

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) is conducting a survey of drinking water treatment facilities as part of its effort to develop national effluent guidelines regulations for the drinking water treatment point source category. This survey requests information on drinking water treatment facilities operating during the 2004 calendar year.

This survey is conducted under the authority of Section 308 of the Clean Water Act (Federal Water Pollution Control Act, 33 U.S.C. Section 1318). **All facilities that receive this survey must respond to it within 45 days** of receiving it. Failure to respond, late filing, or failure to comply with the instructions may result in criminal fines, civil penalties, and other sanctions, as provided by law.

OVERVIEW OF THE SURVEY

The survey is divided into the following sections:

SECTION 1:	General Facility Information
SECTION 2:	Drinking Water Treatment Operations
SECTION 3:	Schematics
SECTION 4:	Residuals Management, Cost, and Analytical Data
SECTION 5:	Practices that Reduce Residuals Generation
SECTION 6:	Comments on Survey Questions

EPA will use the technical data collected in this survey to determine rates of residuals generation and residuals management and treatment. EPA will also use these technical data together with the cost data collected in this survey to estimate the costs and benefits associated with any new national effluent guidelines regulations considered by EPA.

COMPLETION OF THE SURVEY

Each section should be completed by the person(s) most knowledgeable about the information requested. All facilities must have the corporate official or designee responsible for directing or supervising the response to the survey sign one of the Certification Statements on page v to either (1) verify and validate the information provided, or (2) certify that this facility did not perform drinking water treatment operations during the 2004 calendar year.

Not All Questions Will Be Applicable to Every Facility

EPA prepared this survey to be applicable to a variety of facilities; therefore, not all of the questions will apply to every facility. Complete each relevant item in the survey. If a question is not applicable to your facility, write "NA."

Survey Does Not Require Performance of New or Non-Routine Tests or Measurements

You are not required to perform new or nonroutine tests or measurements solely for the purpose of responding to this survey. EPA intends that responses to all questions be based upon available data and information. In the event that exact data are not available, please provide best engineering estimates and note the methods that were used to make the estimates on the Comments page located in Section 6.

Keep a Copy of the Completed Survey

Please keep a copy of the completed survey, including attachments. EPA will review the information submitted and may request your cooperation in answering follow-up questions, if necessary, to complete analyses.

SURVEY ASSISTANCE

EPA DRINKING WATER TREATMENT SURVEY E-MAIL ADDRESSES AND WEBSITE

Information:
E-Mail Address . . . . . Siddiqui.Ahmar@epa.gov
Website . . . . . http://www.epa.gov/waterscience/guide

WHEN TO RETURN THE SURVEY

The response to this survey is due 45 days after receiving it.

If you wish to request an extension, you must do so **in writing** within 30 days of receipt of this survey. Written requests may be e-mailed to Mr. Ahmar Siddiqui at Siddiqui.Ahmar@epa.gov or may be mailed to:

Mr. Ahmar Siddiqui
U.S. Environmental Protection Agency
Engineering and Analysis Division (4303T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Extension requests will be evaluated on a case-by-case basis. Submittal of an extension request to EPA does **not** alter the due date of your survey unless and until EPA agrees to the extension and establishes a new date.

WHERE TO RETURN THE SURVEY

After completing the survey and certifying the information that it contains, use the enclosed mailing label to mail the completed survey to:

U.S. Environmental Protection Agency
Drinking Water Treatment Survey
c/o Eastern Research Group, Inc.
14555 Avion Parkway, Suite 200
Chantilly, VA 20151

REQUESTING AN ELECTRONIC VERSION OF THE SURVEY

If you would like an electronic version of the survey, it is available on the EPA website at http://www.epa.gov/waterscience/guide.

If you choose to complete an electronic version of this survey, you are still responsible for submitting a properly formatted hard copy response which matches this survey's format and pagination. The electronic formatting of this survey is complex and may require more experienced clerical support. **Improperly formatted survey responses will be returned to the respondent.** Therefore, we do not recommend that you complete this survey electronically.

CONFIDENTIAL BUSINESS INFORMATION

If no business confidentiality claim accompanies the information when it is received by EPA, EPA may make the information available to the public without further notice.

Regulations governing the confidentiality of business information are contained in the Code of Federal Regulations (CFR) at Title 40 Part 2, Subpart B. You may assert a business confidentiality claim covering part or all of the information you submit, other than effluent data and information or data that is otherwise publicly available, as described in 40 CFR 2.203(b):

> "(b) *Method and time of asserting business confidentiality claim.* A business which is submitting information to EPA may assert a business confidentiality claim covering the information by placing on (or attaching to) the information, at the time it is submitted to EPA, a cover sheet, stamped or typed legend, or other suitable form of notice complying language such as 'trade secret,' 'proprietary,' or 'company confidential.' Allegedly confidential portions of otherwise nonconfidential documents should be clearly identified by the business, and may be submitted separately to facilitate identification and handling by EPA. If the business desires confidential treatment only until a certain date or until the occurrence of a certain event, the notice should so state."

You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. Note that you may be required to justify any claim of confidentiality at a later time. Note also that facility effluent data are not eligible for confidential treatment, pursuant to Section 308(b) of the Clean Water Act, and thus will be treated as nonconfidential even if the CBI box is checked. In addition, information that is publicly-available should not be claimed confidential. Note also that information claimed confidential cannot be accessed or used by the industry to evaluate data and analyses supporting the national effluent guidelines regulations.

Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR Part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the Clean Water Act.

Information covered by a claim of confidentiality will be made available to EPA contractors to enable the contractors to perform the work required by their contracts with EPA. All EPA contracts provide that contractor employees use the information only for the purpose of performing the work required by their contracts and will not disclose any CBI to anyone other than EPA without prior written approval from each affected business or from EPA's legal office.

GENERAL INSTRUCTIONS FOR SURVEY

Read all question-specific instructions and definitions of key terms. Carefully read the definitions of key terms (found on the following pages) and any instructions for specific questions.

Mark responses for each question. Fill in the appropriate response(s) to each question. Please use **black ink** or **type** in the spaces provided. Answer the questions in sequence unless you are directed to SKIP. Do not leave any entry blank. If the answer is zero, write "0" or "zero". If a question is not applicable to your facility, write "NA."

Include any clarifying attachments. If additional attachments are required to clarify a response, please place the associated question number and your facility SDWIS identification number in the top right corner of each page of the attachments. The following list contains examples of items which may be included as attachments to this survey:

– Facility brochure, pamphlet, general description;
– Piping and residual/wastewater treatment flow diagrams;
– Hard copy summaries of analytical data collected from monitoring locations;
– Residual/wastewater treatment operation and maintenance logs;
– Electronic analytical data collected from monitoring locations; and
– Pollution prevention or management practices policies or data.

Provide best estimates when data are not available. EPA intends that responses to all questions be based upon **available** data and information. Please provide best estimates when exact data are not available. If you provide an estimate, note the methods that were used to make the estimate, along with the section and question number to which the estimate refers, on the Comments page in Section 6. *You are not required to perform new or non-routine tests or measurements solely for the purpose of responding to this survey.*

You may need to make copies of some pages before responding. Some pages in the survey will need to be photocopied before you respond. Indicate how many copies of the page you are submitting by completing the entry "Copy ___ of ___" in the top right corner.

Pay close attention to the measurement units requested (e.g., cubic meters, kilograms). Report answers in the units that are specified, unless the question requires you to specify the units.

Indicate information that should be treated as confidential. You may claim as confidential all information included in the response to a question by checking the Confidential Business Information (CBI) box next to the question number. Note that you may be required to justify any claim of confidentiality at a later time. See the CONFIDENTIAL BUSINESS INFORMATION section on page iii.

Questions? If you have any questions regarding the completion of this survey, see the SURVEY ASSISTANCE section on page xx for the e-mail addresses.

BE SURE TO RETAIN A COPY OF THE COMPLETED SURVEY FOR YOUR RECORDS.

CERTIFICATION STATEMENT

The individual responsible for directing or supervising the preparation of the survey must read and sign the Certification Statement listed below. The certifying official must be a responsible corporate official or his/her authorized representative.

Certification Statement #1 should be completed and signed if this facility performed drinking water treatment operations during the 2004 calendar year.

Certification Statement #2 should be completed and signed if this facility did not perform drinking water treatment operations during the 2004 calendar year.

Certification Statement #1

I certify under penalty of law that the attached survey was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, accurate and complete. In those cases where we did not possess the requested information, we provided best estimates. We have to the best of our ability indicated what we believe to be company confidential business information as defined under 40 CFR Part 2, Subpart B. We understand that we may be required at a later time to justify our claim in detail with respect to each item claimed confidential. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment as explained in Section 308 of the Clean Water Act.

Signature of Certifying Official

Date

Printed Name of Certifying Official

( ) Telephone Number

Title of Certifying Official

Facility Name

(Continue to Section 1 of the survey)

Certification Statement #2

I certify under penalty of law that this facility did not perform drinking water treatment operations during the 2004 calendar year. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment as explained in Section 308 of the Clean Water Act.

Signature of Certifying Official

Date

Printed Name of Certifying Official

( ) Telephone Number

Title of Certifying Official

Facility Name

(Return the survey along with the signed Certification Statement #2 to the address provided on page ii)

DEFINITIONS OF KEY TERMS

Barrel - 42 gallons

Batch Treatment - A discreet volume of wastewater is collected, treated, and discharged.

Centralized Waste Treater (CWT) - A facility that recycles, reclaims, or treats any hazardous or nonhazardous industrial wastes received from off site and/or wastes generated on site by the facility.

Clean Water Act (CWA) - Federal legislation enacted by Congress to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (Federal Water Pollution Control Act of 1972, as amended, 33 U.S.C. 1251 et seq.).

Contract Haul - Collection of wastewater or sludge by a private disposal service, scavenger, or purveyor, in containers for subsequent transportation, treatment, and disposal off site.

Creek - A small, natural stream that is often a shallow or intermittent tributary to a river.

Discharge - The conveyance of wastewater to: (1) United States surface waters such as rivers, lakes, and oceans, or (2) a publicly owned, privately owned, federally owned, combined, or other treatment works.

Disposal - Intentional placement of waste into or on any land where the material will remain after closure. Waste placed into water is defined as discharge, not disposal.

Drinking Water Treatment Plant - Facility where water is filtered, disinfected, and/or otherwise treated prior to its transmission into the distribution system (or its conveyances to another purchasing water utility).

Evaporation - The process by which water or other liquid becomes a gas. Water from land areas, bodies of water, and all other moist surfaces is absorbed into the atmosphere as a vapor.

Facility - Physical location corresponding to the site where industrial and nonindustrial activities are conducted. The activities conducted include, but are not limited to: drinking water supply and treatment operations.

Fall - The dates for the fall season are September 22, 2004 to December 31, 2004.

Federally Owned Treatment Works (FOTW) - Any device or system owned and/or operated by a United States federal agency to recycle, reclaim, or treat liquid industrial wastes.

Groundwater - Water in a saturated zone or stratum beneath the surface of land or water.

Groundwater Intake - Point where untreated water from one or more wells is transmitted to a drinking water treatment plant.

Lake - A body of freshwater or saltwater surrounded by land.

Landfill - A natural or man-made formation in the earth into which solid waste, sludges, or other process residuals are placed for permanent disposal.

Maximum Daily Flow - The maximum flow in a 24-hour period.

Mud Flat - A relatively level area of fine silt along a shore or around an island, alternately covered and uncovered by the tide, or covered by shallow water.

NPDES (National Pollutant Discharge Elimination System) - Program authorized by Sections 307, 318, 402, and 405 of the Clean Water Act that applies to facilities that discharge wastewater directly to United States surface waters.

Playa Lake - Round hollow in the ground in the Southern High Plains of the United States that fills with water and is only present at certain times of the year.

Pollutant - Under the Clean Water Act, a dredged spoil, solid waste, incinerator residue, filter backwash, sewage sludge, munitions, chemical waste, biological material, certain radioactive material, heat, wrecked or discarded equipment, rock sand, cellar dirt, and industrial, municipal, and agricultural waste (40 CFR 122.2).

Pollution Prevention - The use of materials, processes, or practices that reduce or eliminate the creation of pollutants or wastes. It includes practices that result in a reduction of residuals or wastewater generation. Pollution prevention consists of source reduction, in-process recycle and reuse, and water conservation practices.

Pond - A small, shallow impoundment of fresh water.

Prairie Pothole - A shallow, bowl-like depression of variable wetness found in the northern Great Plains of the United States.

Privately Owned Treatment Works (PrOTW) - Any device or system owned and operated by a private company that is used to recycle, reclaim, or treat liquid industrial wastes not generated by that company.

Process Water - Water applied to the process, including any combination of service water, water recycled from the process, water reused from other processes, and any other water applied to the process.

Publicly Owned Treatment Works (POTW) - Any device or system owned by a state or municipality that is used to recycle, reclaim, or treat liquid municipal sewage and/or liquid industrial wastes.

Purchased Water - Water obtained from a third-party vendor.

RCRA - Resource Conservation and Recovery Act of 1976 (42 U.S.C. Section 6901 et seq.), which regulates the generation, treatment, storage, disposal, or recycling of solid and hazardous waste.

Recycle/Recovery - The process of recovering usable constituent fractions within a waste material or removal of contaminants from a waste material to allow it to be reused.

Residuals - The waste products generated during potable water treatment process, including organic and inorganic compounds in liquid and solid forms. Examples of residuals include sludges generated from presedimentation and coagulation, membrane reject water, spent backwash, and ion exchange resins.

River - Water which flows in a channel from high ground to low ground and ultimately to a lake or sea.

Safe Drinking Water Act (SDWA) - Act passed by Congress in 1974 which establishes a cooperative program among local, state, and federal agencies to ensure safe drinking water for consumers (42 U.S.C. 300f et seq.).

SDWIS (Safe Drinking Water Information System) - Database containing information about drinking water treatment plants that is maintained by EPA's Office of Ground Water and Drinking Water.

Sand Flat - A sandy area barren of vegetation that is alternately covered and uncovered by the tide.

Semi-volatile Organic Compound (SVOC)- Substances composed primarily of carbon and hydrogen atoms that have boiling points greater than 200°C.

Slough - A stagnant swamp, marsh, bog, or pond, especially as part of a bayou, inlet, or backwater.

Sludge - The accumulated solids separated from liquids during processing.

Source Reduction - Any practice prior to recycling, treatment, or disposal that reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment. Source reduction can include equipment or technology modifications, process or procedure modifications, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.

SPDES (State Pollutant Discharge Elimination System) - Program that applies to facilities that discharge wastewater directly to state surface waters.

Spring - The dates for the spring season are March 20, 2004 to June 20, 2004.

Storm Water - Any surface runoff related to storm events or snow melt; street wash waters related to street cleaning; or maintenance, infiltration, and drainage.

Summer - The dates for the summer season are June 21, 2004 to September 21, 2004.

Surface Impoundment - A natural topographic depression, man-made excavation, or diked area framed primarily of earthen materials (although it may be lined with man-made materials), used to temporarily or permanently treat, store, or dispose of waste. Other common names for surface impoundments include ponds, pits, lagoons, finishing ponds, and settling ponds.

Surface Waters - Waters of the United States including, but not limited to, oceans and all interstate and intrastate lakes, rivers, streams, creeks, mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds.

Surface Water Intake - Point where untreated water from a surface water source is transmitted to a drinking water treatment plant.

Treatment - Any activity designed to change the character or composition of any waste so as to prepare it for transportation, storage, or disposal; render it amenable for recycling or recovery; or reduce it in volume.

Volatile Organic Compound (VOC) - Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. See 40 CFR Part 51.100 for additional detail and exclusions.

Wastewater - Any liquid that comes in direct contact with or results from the treatment of any raw material or waste.

Wastewater Treatment - The processing of wastewater by physical, chemical, biological, or other means to remove specific pollutants from the wastewater stream or to alter the physical or chemical state of specific pollutants in the wastewater stream. Treatment is performed for discharge of treated wastewater, recycle of treated wastewater to the same process which generated the wastewater, or for reuse of the treated wastewater in another process.

Wetland - A tidal or nontidal area characterized by saturated or nearly saturated soils the majority of the year that form an interface between terrestrial and aquatic environments. Examples include freshwater marshes, brackish marshes, and salt marshes.

Wet Meadow - A grassy wetland with saturated soil, but without standing water for most of the year.

Winter - The dates for the winter season are January 1, 2004 to March 19, 2004.

Zero Discharge or Alternative Disposal Methods - Disposal of process and/or nonprocess wastewaters other than by direct discharge to a surface water or by indirect discharge to a POTW or PrOTW. Examples include reuse/recycle and contract hauling.

ABBREVIATIONS/SYMBOLS

avg	Average
BOD_5	Biochemical oxygen demand (5-day)
btu	British thermal unit
CFR	Code of Federal Regulations
COD	Chemical oxygen demand
ft	Foot
ft^2	Square foot
ft^3	Cubic foot
GAC	Granular activated carbon
gal	Gallon
gpd	Gallons per day
gpm	Gallons per minute
in	Inch
kW	Kilowatt
kwh	Kilowatt-hour
lb	Pound
max	Maximum
MGD	Million gallons per day
mg/L	Milligrams per liter
min	Minimum
mmcf	Million cubic feet
NA	Not applicable
s	Second
SVOC	Semi-volatile organic compound
TDS	Total dissolved solids
ton	English ton, wet weight
TOC	Total organic carbon
TSS	Total suspended solids
VOC	Volatile organic compound
yr	Year
°C	Degrees Celsius
°F	Degrees Fahrenheit
µg/L	Micrograms per liter
µS/cm	Microsiemens per centimeter
%	Percent

TECHNICAL INFORMATION

SECTION 1: GENERAL FACILITY INFORMATION

Attach Facility Address Label Here

1-1. Provide the following information for the primary contact for the technical information supplied in this questionnaire:

_____ (_____)_____
Primary Contact Name Telephone Number

_____ (_____)_____
Title Fax Number

_____
E-mail Address

Convenient time to call:
_____ between ___ am/pm and ___ am/pm
Street Address or Post Office Box (Eastern Time)

_____ _____ _____-_____
City State Zip Code

1-2. Is the information contained in EPA's Safe Drinking Water Information System (SDWIS) correct for your facility for calendar year 2004?

☐ Yes
☐ No

This information can be checked via the Internet at <http://www.epa.gov/enviro/html/sdwis/sdwis_query.html>
At the bottom of this page, enter the facility's Water System ID Number (provided on your mailing label) and press "Enter." This query will provide the Water System Name, County Served, Population Served, Primary Water Source, and System Status for the facility.

CBI?
☐ Yes

1-3. What year did operations begin at the facility? _____

SECTION 2: DRINKING WATER TREATMENT OPERATIONS

CBI? ☐ Yes

2-1. Identify the name and location of the source water(s) intake(s) used at the facility in 2004.

Primary Intake name (Specify): _____

Primary Intake location (Specify):

_____ _____
Latitude Longitude

2nd Intake name (Specify): _____

2nd Intake location (Specify):

_____ _____
Latitude Longitude

CBI? ☐ Yes

2-2. What was the average daily water production at the facility in 2004? Select one category.

☐ 0.01 MGD or less
☐ >0.01 - 0.10 MGD
☐ >0.10 - 1.0 MGD
☐ >1 - 10 MGD
☐ >10 - 100 MGD
☐ >100 - 200 MGD
☐ More than 200 MGD

CBI? ☐ Yes

2-3. What was the average daily amount of water <u>treated</u> at the facility in 2004? Select one category.

☐ 0.01 MGD or less
☐ >0.01 - 0.10 MGD
☐ >0.10 - 1.0 MGD
☐ >10 - 100 MGD
☐ >100 - 200 MGD
☐ More than 200 MGD

CBI?
☐ Yes

2-4. What were the water treatment objectives at the facility in 2004? Check (✓) all that apply.

☐ Algae control
☐ Corrosion control
☐ Disinfection
☐ Dechlorination
☐ Oxidation
☐ Iron removal
☐ Manganese removal
☐ Fluoridation
☐ Taste/odor control
☐ TOC removal
☐ Particulate/Turbidity removal
☐ Softening (hardness removal)
☐ Recarbonation
☐ Organic contaminant removal (e.g., VOCs)
☐ Inorganic contaminant removal (e.g., arsenic)
☐ Radionuclides contaminant removal
☐ Other (Specify): _____

CBI?
☐ Yes

2-5. Provide seasonal raw water characteristics for the primary water intake identified in Question 2-1 above for 2004. Identify the minimum, maximum, and average characteristics for each parameter for each season. If seasonal data are unavailable, provide average annual characteristics for 2004. Characteristics data in another readily available form may be attached in lieu of filling out the table. (See Definitions of Key Terms on page vi for specific dates that comprise each season.)

Parameter	Raw Water Characteristics (mg/L) (or specify unit)											
	Spring			Summer			Fall			Winter		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Conventional Parameters												
Alkalinity												
Ammonia (NH_3)												
Biochemical oxygen demand (BOD)												
Fecal coliform (total)												
Hardness (as $CaCO_3$)												
Nitrogen (total N)												
Oil and grease												
pH												
Temperature (°C)												
Total organic carbon (TOC)												
Total suspended solids (TSS)												
Turbidity (NTU)												
Metals												
Aluminum (Al)												
Arsenic (As) (µg/L)												
Barium (Ba)												
Beryllium (Be)												
Boron (B)												
Cadmium (Cd)												
Chromium (Cr)												
Copper (Cu)												
Iron (Fe)												
Lead (Pb)												
Manganese (Mn)												
Mercury (Hg)												
Nickel (Ni)												
Silica (Si)												
Silver (Ag)												

Parameter	Raw Water Characteristics (mg/L) (or specify unit)											
	Spring			Summer			Fall			Winter		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Metals (Continued)												
Thallium (Tl)												
Zinc (Zn)												
Organics												
Volatile organic compounds (VOCs) (µg/L) (Specify) 1._____ 2._____ 3._____ 4._____												
Semi-volatile organic compounds (SVOCs) (µg/L) (Specify) 1._____ 2._____ 3._____ 4._____												
Other Parameters												
Bromide (Br)												
Calcium (Ca)												
Chemical oxygen demand (COD)												
Chloride (Cl)												
Chlorine (Cl)												
Conductivity (µS/cm)												
Fluoride (Fl)												
Nitrate (NO_3)												
Perchlorate (ClO_4)												
Phosphate (PO_4)												
Radionuclides (Specify) 1._____ 2._____ 3._____ 4._____												
Sodium (Na)												
Sulfate (SO_4)												
Total dissolved solids (TDS)												

SECTION 3: SCHEMATICS

CBI?
☐ Yes

3-1. Drinking Water Treatment Schematic Flow Diagram for 2004

Attach a schematic flow diagram illustrating the treatment processes used at the facility in 2004. For each treatment process, identify the treatment chemicals used (e.g., sulfuric acid for pH adjustment, scale inhibitor ahead of membrane treatment), frequency of chemical usage, flow rates for waste streams, and waste streams that generate residuals. You are not required to create a new diagram if an existing diagram will provide the requested information. Put the facility SDWIS ID number (as shown on the mailing label on the questionnaire cover page) in the upper left corner, and number each diagram if you have multiple diagrams. Specific instructions and an example diagram are provided below. Review and check the following list to ensure that your schematic flow diagram is complete.

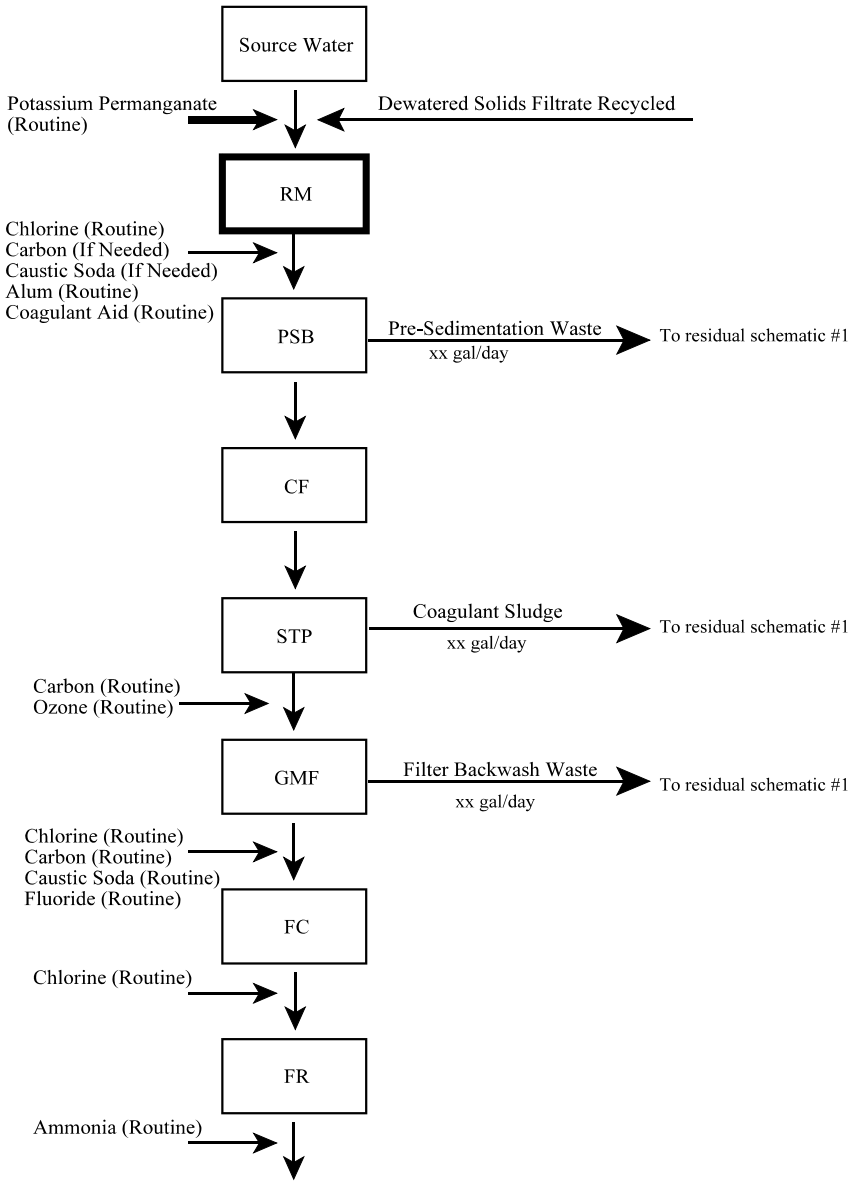
Drinking Water Treatment Schematic Flow Diagram Checklist

Be sure to...	✓
Identify and label all drinking water treatment processes/areas (see drinking water treatment codes on page 10) used in 2004. If you have more than one of a certain type of unit, assign each unit a unique number on the diagram. For example, if you have two presedimentation basins, label the basins as PSB-1 and PSB-2 on the diagram.	☐
Identify all treatment chemicals used in each step of the process. Identify whether the chemicals are used routinely, seasonally, or in response to specific water quality situations.	☐
Identify and label all treatment residuals streams and their destination.	☐
Include average flow rates for waste streams. Provide estimates when actual data are not available and provide the method of estimation (e.g., meter, pipe size, best judgment). If flow is intermittent, provide amount and frequency; for example "100 gal, twice/day; 1000 gal, 4 months/year."	☐
Include and label recycle, recovery, or reuse (e.g., filter backwash recycle) operations.	☐
Number each schematic flow diagram (e.g., Schematic Flow Diagram #1) if multiple diagrams are provided.	☐

Review: If any of the statements above were not checked off, please revise the Schematic Flow Diagram(s)

EXAMPLE
DRINKING WATER TREATMENT SCHEMATIC FLOW DIAGRAM

 # 1 of 1



CBI?
☐ Yes

DRINKING WATER TREATMENT SCHEMATIC FLOW DIAGRAM

 # ____ of ___

DRINKING WATER TREATMENT UNIT CODES	
Code	**Treatment Unit/Operation**
CH	Chlorination only
PSB	Raw water storage/presedimentation basin
PDS	Predisinfection/oxidation prior to sedimentation
PDO	Predisinfection/oxidation
RM	Rapid mix
CF	Coagulation/flocculation
CL	Clarification
FC	Filter clearwell
FR	Finished water reservoir
SF	Softening
STP	Sedimentation tanks and ponds
GMF	Granular media filtration
PDF	Post-disinfection after filters
RO	Reverse osmosis
MF	Microfiltration
UF	Ultrafiltration
NF	Nanofiltration
IX	Ion exchange
CC	Corrosion control
OT1	Other (Specify):
OT2	Other (Specify):
OT3	Other (Specify):

CBI?
☐ Yes

3-2. Drinking Water Treatment Residuals Schematic Flow Diagram for 2004

Attach a schematic flow diagram illustrating the processes used to treat and/or dispose of all residuals generated at the facility. You are not required to create a new diagram if an existing diagram will provide the requested information. Put the facility SDWIS ID number (as shown on the mailing label on the questionnaire cover page) in the upper left corner, and number each diagram if you have multiple diagrams. Specific instructions and an example diagram are provided below. Review and check the following list to ensure that the schematic flow diagram is complete. NOTE: You may combine this schematic with the drinking water treatment schematic requested in Question 3-1.

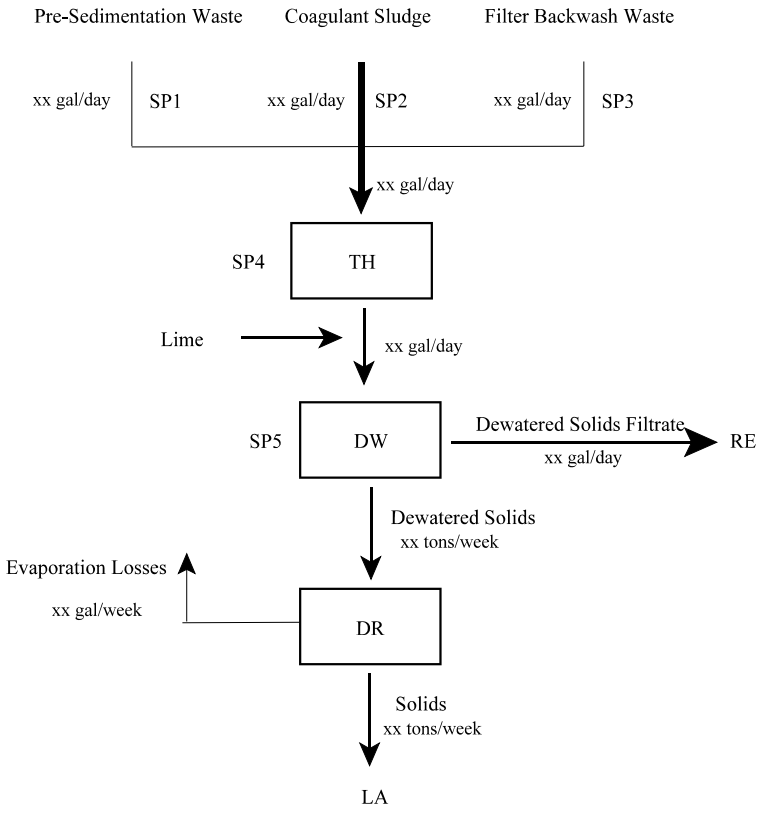
Drinking Water Treatment Residuals Schematic Flow Diagram Checklist

Be sure to...	✓
Identify and label all drinking water treatment residuals.	☐
Include and label all units used to treat residuals in 2004 (see residuals treatment unit codes on page 14). If you have more than one of a certain type of unit, assign each unit a unique number on the diagram. For example, if you have two evaporation ponds, label the ponds as EP-1 and EP-2 on the diagram. These unit labels will be used to complete Question 4-10.	☐
Identify and label all sources entering the residuals treatment system. Sources include, but are not limited to: filter backwash water, sludge, filter material, reuse and backwash water from ion exchange operations, regeneration liquid, resin, reject water from reverse osmosis, greensand media, and sorbent media.	☐
Identify and label all residuals destinations using destination codes provided on page 14.	☐
Include all chemical additions to residuals treatment units.	☐
Include all residuals recycle/reuse streams.	☐
Include flow rates/discharge quantities for all streams, indicating the basis (e.g., daily, monthly, annually).	☐
Indicate all significant losses of water (e.g., evaporation losses). If exact numbers are not available, please estimate.	☐
Indicate all locations at which residuals samples are routinely collected for analysis with the letters "SP" and a unique sample point number (i.e., SP1, SP2).	☐
Number each schematic flow diagram (e.g., Schematic Residuals Flow Diagram #1) if multiple diagrams are provided.	☐

Review: If any of the statements above were not checked off, please revise the Schematic Flow Diagram(s)

EXAMPLE
DRINKING WATER TREATMENT RESIDUALS SCHEMATIC FLOW DIAGRAM

 # 1 of 1



CBI?
☐ Yes

DRINKING WATER TREATMENT RESIDUALS SCHEMATIC FLOW DIAGRAM

 # ____ of ____

RESIDUALS TREATMENT UNIT CODES	
Code	**Treatment Unit/Operation**
DW	Dewatering
DR	Drying
TH	Thickener
CR	Coagulant recovery
LR	Lime recovery
ECB	Evaporation and cystallization of brine
AR	Aeration
HSR	Hydrogen sulfide removal
PH	pH adjustment
STP	Sedimentation tanks and ponds
EP	Evaporation ponds
OTR1	Other (specify):
OTR2	Other (specify):
OTR3	Other (specify):

RESIDUALS DESTINATION CODES	
Code	**Residuals Destination**
PO	POTW
SW	Surface waters
EV	Evaporated from unit on site
SS	Storm water sewer
RE	Recycled/reused in drinking water treatment operations
UI	Underground injection
LR	Licensed low-level radioactive waste disposal site
CH-FO	Contract hauled to a federally owned treatment works
CH-PR	Contract hauled to a privately owned treatment works
CH-CW	Contract hauled to a centralized waste treater
LF	Landfill disposal
SI	Spray irrigation
CP	Composting
OD	On site disposal
LA	Land application
OTD1	Other disposal (specify on Residuals Diagram)

SECTION 4: RESIDUALS MANAGEMENT, COST, AND ANALYTICAL DATA

CBI? ☐ Yes

4-1. During 2004, did the facility discharge drinking water treatment residuals to a publicly owned treatment works (POTW)?

☐ Yes

☐ No (*Skip to Question 4-5*)

CBI? ☐ Yes

4-2. Please provide the name, contact name, address, and telephone number of the POTW.

_____ _____
Name of POTW POTW Contact Name

_____ (_____)_____
Street Address Telephone Number

_____ _____ _____-_____
City State Zip Code

CBI? ☐ Yes

4-3. Please provide the number and date of the facility's indirect discharge permit/agreement with the POTW identified above in Question 4-2.

_____ _____
Indirect Discharge Permit/Agreement Number Date of Permit/Agreement

CBI? ☐ Yes

4-4. Indicate (✓) ALL types of water regulated by this POTW discharge permit/agreement in 2004.

☐ Sludges/wastewater from drinking water treatment operations including presedimentation, coagulation, filter backwashing operations, lime softening, iron and manganese removal, and slow sand and diatomaceous earth filtration

☐ Discharges from residuals treatment including thickener decant, centrate, and filtrate from belt presses or plate and frame and dewatering lagoons

☐ Concentrate (brines) from ion exchange regeneration and salt water conversion, membrane reject water and spent backwash, activated alumina waste regenerant, and membrane cleaning fluid

☐ Storm water collected from areas associated with drinking water treatment operations

☐ Storm water collected from areas <u>not</u> associated with drinking water treatment operations.

☐ Ion exchange resins, spent GAC, and spent filter media

☐ Other (specify): _____

☐ Other (specify): _____

☐ Other (specify): _____

CBI? ☐ Yes

4-5. During 2004, did the facility discharge drinking water treatment residuals/wastewater to surface waters?

☐ Yes

☐ No (*Skip to Question 4-9*)

CBI? ☐ Yes

4-6. Please provide the facility's NPDES/SPDES permit number(s), the name of the receiving water or the coordinates (latitude/longitude) for your discharge outfall , and (✓) the type of receiving water. (See Definitions of Key Terms on page vi for explanation of receiving water types.)

Also, please **ATTACH** a copy of the facility's NPDES/SPDES permit and fact sheet (if available) to this survey.

_____ _____
Name of receiving water NPDES/SPDES Permit Number

or coordinates of outfall discharge

_____ _____
Latitude Longitude

Type of Receiving Water

☐ River	☐ Creek	☐ Wetland	☐ Wet meadow	☐ Other (Specify):
☐ Lake	☐ Pond	☐ Slough	☐ Playa Lake	_____
☐ Ocean	☐ Sand flat	☐ Mudflat	☐ Prairie pothole	

CBI? ☐ Yes

4-7. Has your facility conducted monitoring or other studies to assess the potential impact of discharges to receiving waters?

☐ Yes (please provide an appropriate point of contact for additional information below)

☐ No

_____ (_____)_____
Contact Name Telephone Number

_____ (_____)_____
Title Fax Number

_____
E-mail Address

Convenient time to call:
_____ between ___ am/pm and ___ am/pm
Street Address or Post Office Box (Eastern Time)

_____ _____ _____-_____
City State Zip Code

CBI? ☐ Yes

4-8. Indicate (✓) ALL types of water regulated by this NPDES/SPDES discharge permit in 2004.

- ☐ Sludges/wastewater from drinking water treatment operations including presedimentation, coagulation, filter backwashing operations, lime softening, iron and manganese removal, and slow sand and diatomaceous earth filtration
- ☐ Discharges from residuals treatment including thickener decant, centrate, and filtrate from belt presses or plate and frame and dewatering lagoons
- ☐ Concentrate (brines) from ion exchange regeneration and salt water conversion, membrane reject water and spent backwash, activated alumina waste regenerant, and membrane cleaning fluid
- ☐ Storm water collected from areas associated with drinking water treatment operations
- ☐ Storm water collected from areas not associated with drinking water treatment operations
- ☐ Ion exchange resins, spent GAC, and spent filter media
- ☐ Other (specify): _____
- ☐ Other (specify): _____
- ☐ Other (specify): _____

CBI? ☐ Yes

4-9. Is there land available on site to construct any or additional residuals treatment units?

- ☐ Yes
- ☐ No

CBI? ☐ Yes

4-10. Did the facility treat any residuals generated at the facility in 2004?

- ☐ Yes
- ☐ No (*Skip to Question 4-13 on page 37*)

CBI?
☐ Yes

4-11. Provide the requested information for each unit operation used to manage drinking water treatment residuals in 2004. This question is divided into 12 tables listed below:

A. Thickening
B. Mechanical dewatering (vacuum filter, continuous belt filter press, plate pressure filter, centrifuge)
C. Drying (sand drying beds, freeze-assisted sand beds, solar drying beds, vacuum -assisted drying beds, wedgewire beds, lagoons, evaporation ponds)
D. pH adjustment
E. Evaporation and crystallization of brine
F. Other treatment unit/operation (specify)
G. On-site disposal
H. Off-site land application
I. Off-site landfill disposal
J. Haul to POTW/PrOTW/FOTW/CWT
K. Underground injection
L. Other off-site disposal (specify)

For each residual management operation that the facility uses, please complete the table that best describes the practice. Complete Table 4-11F (Other Treatment Unit/Operation) and Table 4-11L (Other Off-Site Disposal) to describe any treatment unit operations and disposal operations indicated on the Residuals Treatment Diagram that do not fit into Tables 4-11A through 4-11K.

Instructions for completing this table are provided below.

- Answer the first question in each table. If the answer is yes, complete the remainder of the table.
- Complete the appropriate tables for each residuals management operation at the facility.
- Write the treatment unit code or residuals destination code (from the Residuals Treatment Diagram) in the box provided at the top of the table on each page.
- Be sure to provide the type of unit or operation, if applicable, and provide values for all parameters that apply.
- Provide average daily and daily maximum flows for all influent and effluent streams associated with this unit or operation.
- Check the Residuals Diagram to ensure that questions have been completed for each residuals treatment unit/operation indicated on the diagram.
- If exact data are not available, please provide estimates.

TABLE 4-11A. THICKENING

a. Does your facility use thickening? . . . . . ☐ Yes
☐ No *(Skip to Table 4-11B)*

b. Facility terminology for this unit . . . . . _____

c. Type of unit . . . . . ☐ Gravity ☐ Centrifuge
☐ Flotation ☐ Rotating Drum

d. Is the unit operated in batch or continuous mode? . . . . . ☐ Batch
☐ Continuous

e. Design capacity flow . . . . . _____ gal/day

f. Average number of hours per day operated in 2004 . . . . . _____ hours/day

g. Number of days per year operated in 2004 . . _____ days/year

h. Residence time . . . . . _____ hours
or
_____ days

i. Does mechanical mixing occur in this unit? . . ☐ Yes
☐ No

j. Percent solids of sludge entering unit . . . . . _____ % solids

k. Provide thickening agent information:

Thickening Agent	Consumption Rate
	_____ gal/day _____ lbs/day
	_____ gal/day _____ lbs/day
	_____ gal/day _____ lbs/day

l. Amount of thickened sludge generated daily in 2004 . . . . . _____ lb/day
OR
_____ gal/day

m. Percent solids of the sludge leaving the unit . _____ % solids

TABLE 4-11A. THICKENING (Continued)

n. Provide cost information for the unit:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Chemical costs:	
Energy costs (electricity, gas, fuel oil, etc.):	

TABLE 4-11B. MECHANICAL DEWATERING

a. Does your facility use mechanical dewatering? . . . . . ☐ Yes ☐ No *(Skip to Table 4-11C)*

b. Facility terminology for this unit . . . . . _____

c. Type of unit . . . . . ☐ Vacuum Filter ☐ Plate Pressure Filter ☐ Continuous Belt Filter Press ☐ Centrifuge

d. Is the unit operated in batch or continuous mode? . . . . . ☐ Batch ☐ Continuous

e. Design capacity flow . . . . . _____ gal/day

f. Average number of hours per day operated in 2004 . . . . . _____ hours/day

g. Number of days per year operated in 2004 . . _____ days/year

h. Percent solids of sludge entering unit . . . . . _____ % solids

i. Are any chemicals added to this unit? . . . . . ☐ Yes ☐ No *(Skip to Question k)*

j. Provide the chemical name:

Chemical	Purpose	Consumption Rate
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day

k. Amount of solids generated daily in 2004 . . . _____ lb/day
OR
_____ gal/day

l. Percent solids of the dewatered sludge . . . . . _____ % solids

m. Frequency of solids removal . . . . . ☐ Daily ☐ Weekly ☐ Monthly ☐ Other (specify): _____

TABLE 4-11B. MECHANICAL DEWATERING (Continued)

n. Solids disposal method . . . . . ☐ Landfill ☐ Land Application ☐ Residuals Reuse ☐ Other (specify): _____

o. Is the water generated during the dewatering process recycled? . . . . . ☐ Yes ☐ No

p. Provide cost information for the unit:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Chemical costs:	
Energy costs (electricity, gas, fuel oil, etc.):	

TABLE 4-11C. DRYING

a. Does your facility use drying? . . . . . ☐ Yes
☐ No *(Skip to Table 4-11D)*

b. Facility terminology for this unit . . . . . _____

c. Type of unit . . . . . ☐ Sand Drying Bed
☐ Solar Drying Bed
☐ Wedgewire Bed
☐ Lagoon
☐ Freeze-Assisted Sand Bed
☐ Vacuum-Assisted Drying Bed
☐ Other (Specify):
_____
_____
_____

d. Is the unit operated in batch or continuous mode? . . . . . ☐ Batch
☐ Continuous

e. Average number of hours per day operated in 2004 . . . . . _____ hours/day

f. Number of days per year operated in 2004 . . _____ days/year

g. Percent solids of sludge entering unit . . . . . _____ % solids

h. Design capacity flow . . . . . _____ gal/day

i. Bed or pond capacity . . . . . _____ gallons

j. Depth of bed or pond . . . . . _____ feet

k. Surface area of bed or pond . . . . . _____ ft^2

l. Is the unit drained? . . . . . ☐ Yes
☐ No *(Skip to Question n)*

m. Designed drainage rate . . . . . _____ in/day

n. Designed evaporation rate . . . . . _____ in/day

o. Are any chemicals added to this unit? ☐ Yes
☐ No *(Skip to Question q)*

TABLE 4-11C. DRYING (Continued)

p. Provide the chemical name:

Chemical	Purpose	Consumption Rate
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day

q. How much sludge was generated daily in 2004? . . . . . _____ lb/day
OR
_____ gal/day

r. Percent solids of the sludge leaving the unit . _____ % solids

s. Frequency of solids removal . . . . . ☐ Daily ☐ Monthly ☐ Weekly ☐ Other (specify): _____

t. How is the sludge disposed of? . . . . . ☐ Landfill ☐ Land Application ☐ Residuals Reuse ☐ Other (specify): _____

u. Provide cost information for the unit:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Chemical costs:	
Energy costs (electricity, gas, fuel oil, etc.):	

TABLE 4-11D. pH ADJUSTMENT

a. Does your facility use pH adjustment? . . . . . ☐ Yes
☐ No *(Skip to Table 4-11E)*

b. Facility terminology for this unit . . . . . _____

c. Is the unit operated in batch or continuous mode? . . . . . ☐ Batch
☐ Continuous

d. Design capacity flow . . . . . _____ gal/day

e. Average number of hours per day operated in 2004 . . . . . _____ hours/day

f. Number of days per year operated in 2004 . . _____ days/year

g. Residence time . . . . . _____ hours
or
_____ days

h. Does mechanical mixing occur in this unit? . . ☐ Yes
☐ No

i. Percent solids of sludge entering unit . . . . . _____ % solids

j. Are any chemicals added to this unit? . . . . . ☐ Yes
☐ No *(Skip to Question l)*

k. Provide the chemical name:

Chemical	Purpose	Consumption Rate
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day

l. Is sludge collected from this unit? . . . . . ☐ Yes
☐ No *(Skip to Question p)*

m. How much sludge was collected daily in 2004? . . . . . _____ lb/day
OR
_____ gal/day

n. How often was sludge collected from this unit in 2004? . . . . . _____ times per year

TABLE 4-11D. pH ADJUSTMENT (Continued)

o. What was the percent solids of the sludge leaving the unit? . . . . . _____ % solids

p. Provide cost information for the unit:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Chemical costs:	
Energy costs (electricity, gas, fuel oil, etc.):	

TABLE 4-11E. EVAPORATION AND CRYSTALLIZATION OF BRINES

a. Does your facility use evaporation and crystallization of brines?
☐ Yes
☐ No *(Skip to Table 4-11F)*

b. Facility terminology for this unit . . . . . _____

c. Is the unit operated in batch or continuous mode? . . . . . ☐ Batch ☐ Continuous

d. Design capacity flow . . . . . _____ gal/day

e. Average number of hours per day operated in 2004 . . . . . _____ hours/day

f. Number of days per year operated in 2004 . . _____ days/year

g. Residence time . . . . . _____ hours **or** _____ days

h. Feed TDS concentration . . . . . _____ ppm

i. Feed temperature . . . . . _____ °F

j. Feed slurry concentration . . . . . _____ % solids

k. Energy requirements/1,000 gal . . . . . _____ kwh

l. Are any chemicals added to this unit? . . . . . ☐ Yes ☐ No *(Skip to Question n)*

m. Provide the chemical name:

Chemical	Purpose	Consumption Rate
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day

n. TDS of waste brine . . . . . _____ ppm

o. Total solids waste brine . . . . . _____ % solids

p. Distillate TDS . . . . . _____ ppm

TABLE 4-11E. EVAPORATION AND CRYSTALLIZATION OF BRINES (Continued)

q. Disposal method of waste brine . . . . . ☐ Deep Well Injection ☐ Surface Water Discharge ☐ Spray Irrigation ☐ Sanitary Sewer ☐ Other (specify): _____ _____ _____

r. Provide cost information for the unit:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Chemical costs:	
Energy costs (electricity, gas, fuel oil, etc.):	

TABLE 4-11F. OTHER TREATMENT UNIT/OPERATION

a. Does your facility use another type of treatment unit not previously specified? . . . . . ☐ Yes ☐ No *(Skip to Table 4-11G)*

b. Facility terminology for this unit . . . . . _____

c.

Source of Influent Streams to Treatment Unit	Average Daily Flow in 2004	Daily Maximum Flow in 2004
	____ gallons per day ____ days per year	____ gallons per day ____ days per year
	____ gallons per day ____ days per year	____ gallons per day ____ days per year
	____ gallons per day ____ days per year	____ gallons per day ____ days per year
	____ gallons per day ____ days per year	____ gallons per day ____ days per year

d.

Destination of Residuals Flow from Treatment Unit	Average Daily Discharge Rate in 2004	Daily Maximum Discharge Rate in 2004
	____ gallons per day ____ days per year	____ gallons per day ____ days per year
	____ gallons per day ____ days per year	____ gallons per day ____ days per year
	____ gallons per day ____ days per year	____ gallons per day ____ days per year
	____ gallons per day ____ days per year	____ gallons per day ____ days per year

e. Is the unit operated in batch or continuous mode? . . . . . ☐ Batch ☐ Continuous

f. Which parameters/pollutants are targeted for removal by this unit?

_____

_____

g. Design capacity flow . . . . . _____ gal/day

h. Tank or pond capacity . . . . . _____ gallons

i. Average number of hours per day operated in 2004 . . . . . _____ hours/day

j. Number of days per year operated in 2004 . . _____ days/year

TABLE 4-11F. OTHER TREATMENT UNIT/OPERATION (Continued)

k. Does mechanical mixing occur in this unit?
- ☐ Yes
- ☐ No

l. Are any chemicals added to this unit?
- ☐ Yes
- ☐ No *(Skip to Question n)*

m. Provide the chemical name:

Chemical	Purpose	Consumption Rate
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day
		_____ gal/day _____ lbs/day

n. Is sludge collected from this unit? . . . . . .
- ☐ Yes
- ☐ No *(Skip to Question r)*

o. How much sludge was collected daily in 2004? . . . . . _____ lb/day **OR** _____ gal/day

p. How often was sludge collected from this unit in 2004? . . . . . _____ times per year

q. What was the percent solids of the sludge? . _____ % solids

r. Provide cost information for the unit:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Chemical costs:	
Energy costs (electricity, gas, fuel oil, etc.):	

TABLE 4-11G. ON-SITE DISPOSAL

a. Does your facility dispose of residuals on site?
☐ Yes
☐ No *(Skip to Table 4-11H)*

b. Facility terminology for this operation . . . . . _____

c. How often do you dispose of residuals on site? . . . . . _____

d. Quantity of residuals disposed of on site annually . . . . . _____ lbs/year

e. How many trucks are required to haul residuals that are disposed of on site per disposal event? . . . . . _____ trucks

f. What is the quantity of residuals hauled in each truck load? . . . . . _____ lbs/truck

g. What is the distance the trucks travel to the disposal location? . . . . . _____ miles/one way

h. Do you perform waste characterization of the residuals before you dispose of them on site? (e.g., sample or test the residuals for certain components) . . . . . ☐ Yes ☐ No

i. Percent solids of sludge disposed of on site . _____ % solids

j. Provide cost information for the operation:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Energy costs (electricity, gas, fuel, etc.):	
Other (specify):	

TABLE 4-11H. OFF-SITE LAND APPLICATION

a. Does your facility dispose of residuals through off-site land application? . . . . . ☐ Yes ☐ No *(Skip to Table 4-11I)*

b. Facility terminology for this operation . . . . . _____

c. How often do you dispose of residuals through off-site land application? . . . . . _____

d. Quantity of residuals disposed of through off-site land application annually . . . . . _____ lbs/year

e. How many trucks are required to haul residuals that are disposed of through off-site land application per disposal event? . . . . . _____ trucks

f. What is the quantity of residuals hauled in each truck load? . . . . . _____ lbs/truck

g. What is the distance the trucks travel to the disposal location? . . . . . _____ miles/one way

h. Do you perform waste characterization of the residuals before you dispose of them through off-site land application? (e.g., sample or test the residuals for certain components) . . . . . ☐ Yes ☐ No

i. Percent solids of sludge disposed of off site . _____ % solids

j. Provide cost information for the operation:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Energy costs (electricity, gas, fuel, etc.):	
Other (specify):	

TABLE 4-11I. OFF-SITE LANDFILL DISPOSAL

a. Does your facility dispose of residuals in an off-site landfill? . . . . . ☐ Yes ☐ No *(Skip to Table 4-11J)*

b. Facility terminology for this operation . . . . . _____

c. How often do you dispose of residuals at the off-site landfill? . . . . . _____

d. Quantity of residuals disposed of at the off-site landfill annually . . . . . _____ lbs/year

e. How many trucks are required to haul residuals that are disposed of at the off-site landfill per disposal event? . . . . . _____ trucks

f. What is the quantity of residuals hauled in each truck load? . . . . . _____ lbs/truck

g. What is the distance the trucks travel to the disposal location? . . . . . _____ miles/one way

h. Do you perform waste characterization of the residuals before you dispose of them at the off-site landfill? (e.g., sample or test the residuals for certain components) . . . . . ☐ Yes ☐ No

i. Percent solids of sludge disposed of in the off-site landfill . . . . . _____ % solids

j. Provide cost information for the operation:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Energy costs (electricity, gas, fuel, etc.):	
Other (specify):	

TABLE 4-11J. HAUL TO POTW/PrOTW/FOTW/CWT

a. Does your facility dispose of residuals by hauling them to a POTW, PrOTW, FOTW, or CWT? . . . . . ☐ Yes ☐ No *(Skip to Table 4-11K)*

b. Facility terminology for this operation . . . . . _____

c. How often do you dispose of residuals by this method? . . . . . _____

d. Quantity of residuals disposed of by this method annually . . . . . _____ lbs/year

e. How many trucks are required to haul residuals that are disposed of at a POTW, PrOTW, FOTW, or CWT per disposal event? _____ trucks

f. What is the quantity of residuals hauled in each truck load? . . . . . _____ lbs/truck

g. What is the distance the trucks travel to the disposal location? . . . . . _____ miles/one way

h. Do you perform waste characterization of the residuals before you dispose of them by this method? (e.g., sample or test the residuals for certain components) . . . . . ☐ Yes ☐ No

i. Percent solids of sludge hauled to facility . . . _____ % solids

j. Provide cost information for the operation:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Energy costs (electricity, gas, fuel oil, etc.):	
Other (specify):	

TABLE 4-11K. UNDERGROUND INJECTION

a. Does your facility dispose of residuals by underground injection? . . . . . ☐ Yes ☐ No *(Skip to Table 4-11L)*

b. Facility terminology for this operation . . . . . _____

c. How often do you dispose of residuals on site? . . . . . _____

d. Quantity of residuals disposed of by underground injection annually . . . . . _____ gal/year

e. Are trucks used to transport residuals to the injection site? . . . . . ☐ Yes ☐ No *(Skip to Question i)*

f. How many trucks are required to haul residuals to the injection site per disposal event? . . . . . _____ trucks

g. What is the quantity of residuals hauled in each truck load? . . . . . _____ gal/truck

h. What is the distance the trucks travel to the disposal location? . . . . . _____ miles/one way

i. Do you perform waste characterization of the residuals before you dispose of them by underground injection? (e.g., sample or test the residuals for certain components) . . . . . ☐ Yes ☐ No

j. Percent solids of residuals disposed of via underground injection . . . . . _____ % solids

k. Provide cost information for the operation:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Energy costs (electricity, gas, fuel oil, etc.):	
Other (specify):	

TABLE 4-11L. OTHER OFF-SITE DISPOSAL

a. Does your facility dispose of residuals through another off-site disposal method not previously specified? . . . . . ☐ Yes ☐ No *(Skip to Question 4-12)*

b. Facility terminology for this operation . . . . . _____

c. How often do you dispose of residuals by this method? . . . . . _____

d. Quantity of residuals disposed of by this method annually . . . . . _____ lbs/year

e. How many trucks are required to haul residuals that are disposed of by this method per disposal event? . . . . . _____ trucks

f. What is the quantity of residuals hauled in each truck load? . . . . . _____ lbs/truck

g. What is the distance the trucks travel to the disposal location? . . . . . _____ miles/one way

h. Do you perform waste characterization of the residuals before you dispose of them by this method? (e.g., sample or test the residuals for certain components) . . . . . ☐ Yes ☐ No

i. Percent solids of residuals disposed of off site _____ % solids

j. Provide cost information for the operation:

O&M Category	Cost ($)
Labor (operating and maintenance):	
Maintenance (materials and vendors):	
Sampling/monitoring costs:	
Energy costs (electricity, gas, fuel oil, etc.):	
Other (specify):	

4-12. Provide actual operating and maintenance (O&M) costs paid and rates for the facility's residuals management system during 2004. If actual costs and rates are not available, provide best estimates. Include operating labor, maintenance, sampling/monitoring costs, chemical costs, energy costs, steam costs, and sludge, oil, or other residuals disposal fees. Also include rates of labor, energy, steam, and sludge, oil, and other residuals disposal fees.

O&M Category	Cost	Rate
Labor (operating and maintenance)	$	$_____ per hour (average rate of labor)
Maintenance (materials and vendors)	$	
Sampling/monitoring costs	$	
Chemical costs	$	
Energy costs - electricity	$	$_____ per kwh
Energy costs - gas	$	$_____ per ☐ mmcf ☐ million btu
Energy costs - fuel oil	$	$_____ per ☐ gallon ☐ barrel
Energy costs - other *(specify)*:	$	$_____ per *(specify unit of measurement)*:
RCRA-hazardous waste disposal	$	$_____ per ☐ gallon ☐ ton
Nonhazardous waste disposal	$	$_____ per ☐ gallon ☐ ton
Contract Hauling	$	$_____ per ☐ gallon ☐ ton
Other disposal, if other classifications apply to the area *(specify type)*:	$	$_____ per ☐ gallon ☐ ton
Other *(specify)*:	$	
Other *(specify)*:	$	
Other *(specify)*:	$	

RCRA = Resource Conservation and Recovery Act
kwh = kilowatt hour
barrel = 42 gallons
mmcf = million cubic feet
btu = British thermal unit
ton = English ton, wet weight

Analytical Data

CBI? ☐ Yes

4-13. Were samples collected and analyzed to characterize/monitor any drinking water treatment residuals generated at the facility in 2004?

☐ Yes

☐ No (*Skip to Section 5, Question 5-1)*

CBI? ☐ Yes

4-14. In the following table, please provide the requested information for each sampling point reported in Question 3-2 (Residuals Diagram). Instructions for completing the table are provided below.

- Complete the questions for each sampling point at the facility. **Photocopy Question 4-14 for each sampling point before writing on it, and number each copy in the space provided in the top right corner.**
- Provide a description of the waste stream and its corresponding average flow rate. Include units for flow rate (e.g., gallons per minute).
- Identify (✓) the pollutants that were monitored.
- Identify how many times during 2004 these pollutants were monitored.
- Indicate whether the samples were grab or composite.
- Identify the analytical method used to analyze the sample for each pollutant.
- Identify the detection limit for the pollutant using the specified analytical method.
- Provide the range of pollutant concentrations, including an average, that were obtained during monitoring.

NOTES:

Electronic or hard copies of monitoring reports can be submitted in lieu of filling out the table in Question 4-14.

EPA reserves the right to contact the facility for additional data.

Copy ___ of ___

CBI?
☐ Yes

4-14. Residuals Sampling and Analysis Data

Sampling Point: ____ (from Residuals Diagram # __)
Waste Stream Name/Description: _____
Average Flow Rate (specify units): _____

Monitored Pollutants/ Parameters	Frequency of monitoring events (e.g., daily, weekly, monthly)	Type of Sample (grab, composite)	Analytical Method	Detection Limit (mg/L)	Range (Min, Max, Avg) of pollutant concentrations for 2004 (Specify unit of concentration)
Conventional Parameters					
☐ Alkalinity					
☐ Ammonia (NH_3)					
☐ Biochemical oxygen demand (BOD)					
☐ Fecal coliform (total)					
☐ Hardness (as $CaCO_3$)					
☐ Nitrogen (total N)					
☐ Oil and Grease					
☐ pH					
☐ Temperature (°C)					
☐ Total organic carbon (TOC)					
☐ Total suspended solids (TSS)					
☐ Turbidity (NTU)					
Metals					
☐ Aluminum (Al)					
☐ Arsenic (As) (µg/L)					
☐ Barium (Ba)					
☐ Beryllium (Be)					
☐ Boron (B)					
☐ Cadmium (Cd)					
☐ Chromium (Cr)					
☐ Copper (Cu)					
☐ Iron (Fe)					

Monitored Pollutants/ Parameters	Frequency of monitoring events (e.g., daily, weekly, monthly)	Type of Sample (grab, composite)	Analytical Method	Detection Limit (mg/L)	Range (Min, Max, Avg) of pollutant concentrations for 2004 (Specify unit of concentration)
Metals (Continued)					
☐ Lead (Pb)					
☐ Manganese (Mn)					
☐ Mercury (Hg)					
☐ Nickel (Ni)					
☐ Silica (Si)					
☐ Silver (Ag)					
☐ Thallium (Tl)					
☐ Zinc (Zn)					
☐ Others_____					
Organics					
☐ Volatile organic compounds (VOCs) (Specify) 1. _____ 2. _____ 3. _____ 4. _____					
☐ Semi-volatile organic compounds (SVOCs) (Specify) 1. _____ 2. _____ 3. _____ 4. _____					
Other Parameters					
☐ Bromide (Br)					
☐ Calcium (Ca)					
☐ Chemical oxygen demand (COD)					
☐ Chloride (Cl)					
☐ Chlorine (Cl)					
☐ Conductivity (µS/cm)					
☐ Fluoride (Fl)					

Monitored Pollutants/ Parameters	Frequency of monitoring events (e.g., daily, weekly, monthly)	Type of Sample (grab, composite)	Analytical Method	Detection Limit (mg/L)	Range (Min, Max, Avg) of pollutant concentrations for 2004 (Specify unit of concentration)
Other Parameters (Continued)					
☐ Nitrate (NO_3)					
☐ Perchlorate (ClO_4)					
☐ Phosphate (PO_4)					
☐ Radionuclides 1. _____ 2. _____ 3. _____ 4. _____					
☐ Sodium (Na)					
☐ Sulfate (SO_4)					
☐ Total Dissolved Solids (TDS)					
☐ Others _____					

SECTION 5: PRACTICES THAT REDUCE RESIDUALS GENERATION

CBI?
☐ Yes

5-1. Below is a list of practices that reduce the quantity of residuals or chemicals discharged/disposed. For each practice performed at the facility, please complete the associated table that best describes the practice. Complete Table 5-1F (Other Practice) to describe any residuals reduction practices that do not fit into Tables 5-1A to 5-1E. **Only complete the tables that are applicable to the practices at the facility in 2004.**

A. Adjust source water and intake locations to maximize raw water quality
B. Chemical recovery (e.g., lime or coagulant recovery)
C. Beneficial reuse (e.g., development of co-products, such as bricks or cement, or blending residuals with compost material)
D. Best management practices (BMPs)
E. Recycling of all wastewater from residuals treatment to plant headworks
F. Other practice (specify)

TABLE 5-1A.

Adjust source water and intake locations to maximize raw water quality

a. Describe practice: _____

_____

b. List affected drinking water treatment residuals streams: _____

_____

c. Cost and/or savings of implementing practice in 2004:
Cost of installation/implementation . . . . . $ _____
Net change in operating costs as a result of the practice . . . . . $ _____

d. What was the reduction in the quantity of residuals generated in 2004 as a result of this activity? . . . . . _____ gal/day (lb/day)

e. What was the change in the quantity of solids generated in 2004?

Type of Solid	Total *Decrease* in Annual Quantity Discharged (lb/yr)	Total *Increase* in Annual Quantity Discharged (lb/yr)

f. Did the practice result in a change in chemicals/pollutants discharged in residuals in 2004? . . . . . ☐ Yes ☐ No (*Skip to next table*)

g. What was the change in chemicals/pollutants discharged in the residuals in 2004?

Chemical/Pollutant	Total *Decrease* in Annual Quantity Discharged	Total *Increase* in Annual Quantity Discharged
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr

TABLE 5-1B.
Chemical recovery (e.g., lime or coagulant recovery)

a. Describe practice: _____

_____

b. List affected drinking water treatment residuals streams: _____

_____

c. Cost and/or savings of implementing practice in 2004:
Cost of installation/implementation . . . . . $ _____
Net change in operating costs as a result of the practice . . . . . $ _____

d. What was the reduction in the quantity of residuals generated in 2004 as a result of this activity? . . . . . _____ gal/day (lb/day)

e. What was the change in the quantity of solids generated in 2004?

Type of Solid	Total *Decrease* in Annual Quantity Discharged (lb/yr)	Total *Increase* in Annual Quantity Discharged (lb/yr)

f. Did the practice result in a change in chemicals/pollutants discharged in residuals in 2004? . . . . . ☐ Yes ☐ No (*Skip to next table*)

g. What was the change in chemicals/pollutants discharged in the residuals in 2004?

Chemical/Pollutant	Total *Decrease* in Annual Quantity Discharged	Total *Increase* in Annual Quantity Discharged
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr

TABLE 5-1C.

Beneficial reuse (e.g., development of co-products, such as bricks or cement, or blending residuals with compost material)

a. Describe practice: _____

_____

b. List affected drinking water treatment residuals streams: _____

_____

c. Cost and/or savings of implementing practice in 2004:
Cost of installation/implementation . . . . . $ _____
Net change in operating costs as a result of the practice . . . . . $ _____

d. What was the reduction in the quantity of residuals generated in 2004 as a result of this activity? . . . . . _____ gal/day (lb/day)

e. What was the change in the quantity of solids generated in 2004?

Type of Solid	Total *Decrease* in Annual Quantity Discharged (lb/yr)	Total *Increase* in Annual Quantity Discharged (lb/yr)

f. Did the practice result in a change in chemicals/pollutants discharged in residuals in 2004? . . . . . ☐ Yes ☐ No (*Skip to next table*)

g. What was the change in chemicals/pollutants discharged in the residuals in 2004?

Chemical/Pollutant	Total *Decrease* in Annual Quantity Discharged	Total *Increase* in Annual Quantity Discharged
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr

TABLE 5-1D.
Best management practices (BMPs)

a. Describe practice: _____

_____

b. List affected drinking water treatment residuals streams: _____

_____

c. Cost and/or savings of implementing practice in 2004:
Cost of installation/implementation . . . . . $ _____
Net change in operating costs as a result of the practice . . . . . $ _____

d. What was the reduction in the quantity of residuals generated in 2004 as a result of this activity? . . . . . _____ gal/day (lb/day)

e. What was the change in the quantity of solids generated in 2004?

Type of Solid	Total *Decrease* in Annual Quantity Discharged (lb/yr)	Total *Increase* in Annual Quantity Discharged (lb/yr)

f. Did the practice result in a change in chemicals/pollutants discharged in residuals in 2004? . . . . . ☐ Yes ☐ No (*Skip to next table*)

g. What was the change in chemicals/pollutants discharged in the residuals in 2004?

Chemical/Pollutant	Total *Decrease* in Annual Quantity Discharged	Total *Increase* in Annual Quantity Discharged
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr

TABLE 5-1E.

Recycling of all wastewater from residuals treatment to plant headworks

a. Describe practice: _____

_____

b. List affected drinking water treatment residuals streams: _____

_____

c. Cost and/or savings of implementing practice in 2004:
Cost of installation/implementation . . . . . $ _____
Net change in operating costs as a result of the practice . . . . . $ _____

d. What was the reduction in the quantity of residuals generated in 2004 as a result of this activity? . . . . . _____ gal/day (lb/day)

e. What was the change in the quantity of solids generated in 2004?

Type of Solid	Total *Decrease* in Annual Quantity Discharged (lb/yr)	Total *Increase* in Annual Quantity Discharged (lb/yr)

f. Did the practice result in a change in chemicals/pollutants discharged in residuals in 2004? . . . . . ☐ Yes ☐ No (*Skip to next table*)

g. What was the change in chemicals/pollutants discharged in the residuals in 2004?

Chemical/Pollutant	Total *Decrease* in Annual Quantity Discharged	Total *Increase* in Annual Quantity Discharged
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr

TABLE 5-1F.
Other practice (specify)

a. Describe practice: _____

_____

b. List affected drinking water treatment residuals streams: _____

_____

c. Cost and/or savings of implementing practice in 2004:
Cost of installation/implementation . . . . . $ _____
Net change in operating costs as a result of the practice . . . . . $ _____

d. What was the reduction in the quantity of residuals generated in 2004 as a result of this activity? . . . . . _____ gal/day (lb/day)

e. What was the change in the quantity of solids generated in 2004?

Type of Solid	Total *Decrease* in Annual Quantity Discharged (lb/yr)	Total *Increase* in Annual Quantity Discharged (lb/yr)

f. Did the practice result in a change in chemicals/pollutants discharged in residuals in 2004? . . . . . ☐ Yes ☐ No (*Skip to Question 5-2*)

g. What was the change in chemicals/pollutants discharged in the residuals in 2004?

Chemical/Pollutant	Total *Decrease* in Annual Quantity Discharged	Total *Increase* in Annual Quantity Discharged
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr
	_____ ☐ lb/yr _____ ☐ gal/yr	_____ ☐ lb/yr _____ ☐ gal/yr

CBI?
☐ Yes

5-2. Do you plan on implementing any practices for reducing the generation of residuals and/or chemicals discharged with the residuals in the future? If so, please list below.

Practice	Scheduled Implementation (Date)

SECTION 6: COMMENTS ON SURVEY QUESTIONS

Copy ___ of ___

CBI?
☐ Yes

6-1. Please cross-reference your comments by question number. **If you need additional space, please photocopy this page before writing on it, and number each copy in the space provided.**

Section Number	Question Number	Comment